APPENDIX A - CLAIM AMENDMENTS
INCLUDING NOTATIONS TO INDICATE CHANGES MADE
Serial No.: 09/691,006
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Amendments to the following are indicated by underlining what has been added and bracketing what has been deleted.

In the Claims

For convenience, all pending claims are shown below.

1. **(Twice Amended)** An ellipsometer apparatus for use in providing an image of at least a portion of a sample, the ellipsometer apparatus comprising:

an objective lens having a focal plane at which a sample plane of the sample is positioned;

an illumination source for providing incident light normal to the sample plane, wherein the incident light comprises linearly polarized light incident on the objective lens, wherein the linearly polarized light comprises p and s wave components, wherein the objective lens focuses the incident linearly polarized light onto the sample, and further wherein at least a portion of the focused incident polarized light is reflected by the sample resulting in reflected light, the reflected light comprising p and s wave components corresponding, respectively, to the p and s wave components of the incident light focused on the sample;

a spatial filter to modify at least a portion of the incident light or the reflected light, wherein the spatial filter is positioned at a plane of an exit pupil of the objective lens; and

an analyzer portion operable to generate polarization information based on the reflected light, wherein the polarization information is a function of the p and s wave components of the incident light having different reflectivities from the sample.

2. The apparatus of claim 1, wherein the illumination source comprises a fiber illuminator.

3. The apparatus of claim 1, wherein the objective lens is a high numerical aperture objective lens having a numerical aperture in the range of 0.5 to less than 1.

4. The apparatus of claim 1, wherein the spatial filter is positioned adjacent the objective lens in an actual plane of the exit pupil thereof.

5. The apparatus of claim 1, wherein the spatial filter is part of the illumination source and is positioned in a conjugate plane of the exit pupil of the objective lens.

6. The apparatus of claim 1, wherein the spatial filter is part of the analyzer portion and is positioned in a conjugate plane of the exit pupil of the objective lens.

7. The apparatus of claim 1, wherein the analyzer portion comprises:

a rotatable quarter wave plate;

an analyzer;

a lens; and

a detector, wherein the rotatable quarter wave plate, the analyzer, and the lens are positioned such that the reflected light passes through the rotatable quarter wave plate and the analyzer, and further wherein the reflected light is focused onto the detector by the lens.

8. The apparatus of claim 7, wherein the detector is a charge coupled device array detector.

9. The apparatus of claim 1, wherein the apparatus further comprises a beam splitter for passing the linearly polarized light normal to the sample plane and incident on the objective lens, and further wherein the beam splitter diverts the reflected light to the analyzer portion.

10. The apparatus of claim 1, wherein the illumination source comprises a polarization converter providing for linearly polarized light with polarization states that are at +/- 45 degrees with respect to an incident plane of the linearly polarized light, and wherein the analyzer portion comprises a polarization device matched to the polarization converter of the illumination source.

11. The apparatus of claim 1, wherein the spatial filter is configured such that the polarization state of the light that is modified thereby is aligned at 45 degrees with respect to an incident plane of the linearly polarized light.

12. The apparatus of claim 1, wherein the illumination source includes a thin filament bulb and a low numerical aperture lens for use in projecting an image of the filament onto the sample and is operable to sweep the image across the sample.

13. **(Twice Amended)** An ellipsometry method for use in providing an image of at least a portion of a sample, the method comprising:

providing an objective lens having a focal plane at which a sample plane of the sample is positioned;

providing linearly polarized light normal to the sample plane incident on the objective lens, wherein providing linearly polarized light comprises providing p and s wave components;

focusing the incident linearly polarized light onto the sample, wherein at least a portion of the focused incident polarized light is reflected by the sample resulting in reflected light, wherein the reflected light comprises p and s wave components corresponding, respectively, to the p and s wave components of the incident light focused on the sample;

spatial filtering at least a portion of the incident light or the reflected light using a spatial filter positioned at a plane of an exit pupil of the objective lens; and

generating polarization information based on the reflected light, wherein the polarization information is a function of the p and s wave components of the incident light having different reflectivities from the sample.

14. The method of claim 13, wherein providing linearly polarized light normal to the sample plane incident on the objective lens comprises:

providing light from an extended source;

collimating the light; and

linearly polarizing the collimated light.

15. The method of claim 13, wherein the objective lens is a high numerical aperture objective lens having a numerical aperture in the range of 0.5 to less than 1.

16. The method of claim 13, wherein spatial filtering at least a portion of the incident light or the reflected light comprises using a spatial filter at an actual plane of the exit pupil of the objective lens.

17. The method of claim 13, wherein spatial filtering at least a portion of the incident light or the reflected light comprises using a spatial filter at a conjugate plane of the exit pupil of the objective lens.

18. The method of claim 13, wherein generating polarization information based on the reflected light comprises:

passing the reflected light through an analyzer portion comprising at least a rotatable quarter wave plate and an analyzer;

rotating at least the rotatable quarter wave plate to at least two angular positions;

detecting at least two polarization images corresponding to the at least two angular positions.

19. The method of claim 18, wherein generating polarization information based on the reflected light further comprises generating an image using at least one of a ratio and a difference of the at least two polarization images.

20. The method of claim 18, wherein the method further comprises:

rotating the analyzer of the analyzer portion to one or more positions; and

generating additional polarization images corresponding to the one or more positions.

21. The method of claim 13, wherein providing linearly polarized light normal to the sample plane incident on the objective lens comprises providing linearly polarized light with polarization states that are at +/- 45 degrees with respect to an incident plane of the linearly polarized light using a polarization converter, and further wherein generating polarization information based on the reflected light comprises generating polarization information based on the reflected light using a polarization device matched to the polarization converter.

22. The method of claim 13, wherein spatial filtering at least a portion of the incident light or the reflected light comprises providing a spatial filter configured such that the polarization state of the light that is modified thereby is aligned at 45 degrees with respect to an incident plane of the linearly polarized light incident on the objective lens.

23. The method of claim 22, wherein generating polarization information based on the reflected light comprises:

passing the reflected light through an analyzer portion comprising at least a rotatable quarter wave plate and an analyzer; and

synchronously rotating the rotatable quarter wave plate, the analyzer, and the spatial filter to obtain a plurality of polarization images.

24. The method of claim 13, wherein providing linearly polarized light normal to the sample plane incident on the objective lens comprises providing light such that an illumination line is focused on the sample, and further wherein the method comprises sweeping the illumination line across the sample.

25. The apparatus of claim 1, wherein the spatial filter is operable to break the azimuth symmetry of the incident light or the reflected light.

26. The apparatus of claim 2, wherein the fiber illuminator comprises a light source and a fiber bundle.

27. **(Once Amended)** An ellipsometer apparatus for use in providing an image of at least a portion of a sample, the ellipsometer apparatus comprising:

an objective lens having a focal plane at which a sample plane of the sample is positioned;

an illumination source comprising an extended light source for providing incident light normal to the sample plane, wherein the incident light comprises p and s wave components, wherein the incident light comprises linearly polarized light incident on the objective lens, wherein the objective lens focuses the incident linearly polarized light onto the sample, and further wherein at least a portion of the focused incident polarized light is reflected by the sample resulting in reflected light, the reflected light comprising p and s wave components, corresponding respectively, to the p and s wave components of the incident light focused on the sample;

a spatial filter to modify at least a portion of the incident light or the reflected light, wherein the spatial filter is operable to break the azimuth symmetry of the incident light or the reflected light; and

an analyzer portion, wherein the analyzer portion is operable to generate polarization information based on the reflected light for use in generating an image of at least a portion of the sample using the polarization information, wherein the polarization information is a function of the p and s wave components of the incident light having different reflectivities from the sample.

28. The apparatus of claim 27, wherein the extended light source comprises a light source and a fiber bundle.

29. The apparatus of claim 27, wherein the spatial filter is positioned adjacent the objective lens in an actual plane of an exit pupil thereof.

30. The apparatus of claim 27, wherein the spatial filter is part of the illumination source and is positioned in a conjugate plane of an exit pupil of the objective lens.

31. The apparatus of claim 27, wherein the spatial filter is part of the analyzer portion and is positioned in a conjugate plane of an exit pupil of the objective lens.

32. The apparatus of claim 27, wherein the analyzer portion comprises:

a rotatable quarter wave plate;

an analyzer;

a lens; and

a detector, wherein the rotatable quarter wave plate, the analyzer, and the lens are positioned such that the reflected light passes through the rotatable quarter wave plate and the analyzer, and further wherein the reflected light is focused onto the detector by the lens.

33. The apparatus of claim 27, wherein the illumination source comprises a polarization converter providing for linearly polarized light with polarization states that are at +/- 45 degrees with respect to an incident plane of the linearly polarized light, and wherein the analyzer portion comprises a polarization device matched to the polarization converter of the illumination source.

34. The apparatus of claim 27, wherein the spatial filter is configured such that the polarization state of the light that is modified thereby is aligned at 45 degrees with respect to an incident plane of the linearly polarized light.

35. **(Once Amended)** An ellipsometry method for use in providing an image of at least a portion of a sample, the method comprising:

providing an objective lens having a focal plane at which a sample plane of the sample is positioned;

providing linearly polarized light normal to the sample plane incident on the objective lens, wherein providing linearly polarized light comprises providing light from an extended light source, and further wherein the linearly polarized light comprises p and s wave components;

focusing the incident linearly polarized light onto the sample, wherein at least a portion of the focused incident polarized light is reflected by the sample resulting in reflected light, wherein the reflected light comprises p and s wave components corresponding, respectively, to the p and s wave components of the incident light focused on the sample;

spatial filtering at least a portion of the incident light or the reflected light, wherein spatial filtering at least a portion of the incident light or reflected light comprises breaking the azimuth symmetry of the incident light or the reflected light;

generating polarization information based on the reflected light, wherein the polarization information is a function of the p and s wave components of the incident light having different reflectivities from the sample; and

providing an image of at least a portion of the sample using the polarization information.

36. The method of claim 35, wherein providing linearly polarized light normal to the sample plane incident on the objective lens further comprises:

collimating the light provided by the extended light source; and

linearly polarizing the collimated light.

37. The method of claim 35, wherein spatial filtering at least a portion of the incident light or the reflected light comprises using a spatial filter at a plane of an exit pupil of the objective lens.

38. The method of claim 35, wherein spatial filtering at least a portion of the incident light or the reflected light comprises using a spatial filter at a conjugate plane of an exit pupil of the objective lens.

39. The method of claim 35, wherein generating polarization information based on the reflected light comprises:

passing the reflected light through an analyzer portion comprising at least a rotatable quarter wave plate and an analyzer;

rotating at least the rotatable quarter wave plate to at least two angular positions; and

detecting at least two polarization images corresponding to the at least two angular positions.

40. The method of claim 39, wherein generating the image comprises generating the image of at least a portion of the sample using at least one of a ratio and a difference of the at least two polarization images.

41. The method of claim 40, wherein the method further comprises:

rotating the analyzer of the analyzer portion to one or more positions; and

generating additional polarization images corresponding to the one or more positions.

42. The method of claim 35, wherein providing linearly polarized light normal to the sample plane incident on the objective lens comprises providing linearly polarized light with polarization states that are at +/- 45 degrees with respect to an incident plane of the linearly polarized light using a polarization converter, and further wherein generating polarization information based on the reflected light comprises generating polarization information based on the reflected light using a polarization device matched to the polarization converter.

43. The method of claim 35, wherein spatial filtering at least a portion of the incident light or the reflected light comprises providing a spatial filter configured such that the polarization state of the light that is modified thereby is aligned at 45 degrees with respect to an incident plane of the linearly polarized light incident on the objective lens.

44. The method of claim 43, wherein generating polarization information based on the reflected light comprises:

passing the reflected light through an analyzer portion comprising at least a rotatable quarter wave plate and an analyzer; and

synchronously rotating the rotatable quarter wave plate, the analyzer, and the spatial filter to obtain a plurality of polarization images.